



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/761,765	01/18/2001	Charles Anderson	3633-501	5931
20582	7590	03/22/2004		
JONES DAY 51 Louisiana Aveue, N.W WASHINGTON, DC 20001-2113			EXAMINER PIZIALI, ANDREW T	
			ART UNIT 1771	PAPER NUMBER
DATE MAILED: 03/22/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/761,765

Applicant(s)

ANDERSON ET AL.

Examiner

Andrew T Piziali

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 26-49 is/are pending in the application.
- 4a) Of the above claim(s) 36 and 37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-35 and 38-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment filed on 2/17/04 has been entered. The examiner has withdrawn the specification objections based on the amendments to the specification. The examiner has withdrawn the claim objections based on the cancellation of the objected claims. The examiner has withdrawn the claim rejections based on the cancellation of the rejected claims.

### ***Election/Restrictions***

2. Newly submitted claim 36 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: In originally filed claim 12 the applicant claimed that the additional high index layer is closer to the substrate than the titanium oxide layer. In newly submitted claim 36 the applicant is claiming that the titanium oxide layer is closer to the substrate than the additional high index layer.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 36 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

3. Newly submitted claim 37 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: In the restriction requirement mailed on 2/1/2002 the applicant was required to elect one of five species. The applicant elected, without traverse, species (d). Claim 37 is clearly directed to non-elected species (e).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution

Art Unit: 1771

on the merits. Accordingly, claim 37 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 26-35 and 38-49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 26, the phrase “a slightly conducting material” is unclear. The specification fails to define what constitutes “a slightly conducting material.”

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 26-31, 34-35, 38-39, 44 and 47-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Publication No. 63-131101 to Yoshihiro et al. (hereinafter referred to as Yoshihiro).

Regarding claims 26-31, 34-35, 38-39, 44 and 47-49, Yoshihiro discloses a transparent substrate having at least one surface comprising an antireflection coating made of a multilayer stack having alternating thin layers of high and low refractive indices comprising at least one high-index thin multilayer (14a and 14b) having a refractive index value higher than 1.9 and lower than 2.45 comprising at least one titanium oxide layer (14b) and at least one additional

Art Unit: 1771

layer (14a) having a refractive index of at most 2.3, such as an antimony-doped tin oxide layer (slightly conducting material), and low refractive index layers (13 and 15) having a refractive index of from 1.30 and 1.65 (see entire document including Patent Abstract and page 6).

Regarding claim 27, Yoshihiro discloses that the high-index multilayer may have a refractive index ranging from 2.25 to 2.38 (page 6).

Regarding claim 28, Yoshihiro discloses that the thin layers may comprise dielectric materials such as titanium oxide (Patent Abstract).

Regarding claim 29, Yoshihiro discloses that the titanium oxide layer and the additional high index layer are contiguous layers and the additional high index layer is closer to the substrate than the titanium oxide layer (Patent Abstract Figure).

Regarding claim 30, Yoshihiro discloses that the absolute value of the difference between the refractive index of the additional high index layer less the refractive index of the first titanium oxide layer may be from 0.1 and 0.6 (page 6).

Regarding claim 31, Yoshihiro discloses that the low refractive index thin layers may comprise at least one of silicon oxide and aluminum oxide (page 6).

Regarding claim 34, Yoshihiro discloses that the antireflection coating may have a formula (high-index layer/low-index layer) $n$ , wherein  $n$  is 2 or 3 (Patent Abstract).

Regarding claim 35, Yoshihiro discloses that the doped metal oxide may be antimony-doped tin oxide (page 6).

Regarding claim 38, Yoshihiro discloses that the transparent substrate may comprise a high index layer distinct from the high-index multilayer, having a refractive index of between 1.9 and 2.2 which comprises tantalum oxide, zirconium oxide, tin oxide, or indium oxide (page 6).

Regarding claim 39, Yoshihiro discloses that the transparent substrate may be used as a glazing (page 2).

Regarding claims 44 and 47, Yoshihiro discloses that the substrate may be used on a display screen (page 2).

Regarding claims 44 and 48-49, Yoshihiro discloses that the substrate may be used as a glazing on glass (Patent Abstract).

8. Claims 26-31, 34, 38-39, 44-45 and 48-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Publication No. 60-081047 to Tatsuo et al. (hereinafter referred to as Tatsuo).

Regarding claims 26-31, 34, 38-39, 44-45 and 48-49, Tatsuo discloses a transparent substrate having at least one surface comprising an antireflection coating made of a multilayer stack having alternating thin layers of high and low refractive indices comprising at least one high-index thin multilayer (2a and 3a) having a refractive index value higher than 1.9 and lower than 2.45 comprising at least one titanium oxide layer (3a) and at least one additional layer (2a) having a refractive index of at most 2.3, such as an indium-doped tin oxide layer (slightly conducting material), and low refractive index layers (3b) having a refractive index of from 1.30 and 1.65 (see entire document including Patent Abstract).

Regarding claim 27, Tatsuo discloses that the high-index multilayer may have a refractive index ranging from 2.25 to 2.38 (see entire document).

Regarding claim 28, Tatsuo discloses that the thin layers may comprise dielectric materials such as titanium oxide (Patent Abstract).

Art Unit: 1771

Regarding claim 29, Tatsuo discloses that the titanium oxide layer and the additional high index layer are contiguous layers and the additional high index layer is closer to the substrate than the titanium oxide layer (Patent Abstract Figure).

Regarding claim 30, Tatsuo discloses that the absolute value of the difference between the refractive index of the additional high index layer less the refractive index of the first titanium oxide layer may be from 0.1 and 0.6 (see entire document).

Regarding claim 31, Tatsuo discloses that the low refractive index thin layers may comprise at least one of silicon oxide and aluminum oxide (Patent Abstract).

Regarding claim 34, Tatsuo discloses that the antireflection coating may have a formula (high-index layer/low-index layer) $n$ , wherein  $n$  is 2 or 3 (Patent Abstract).

Regarding claim 38, Tatsuo discloses that the transparent substrate may comprise a high index layer distinct from the high-index multilayer, having a refractive index of between 1.9 and 2.2 which may comprise zirconium oxide (page 234).

Regarding claim 39, Tatsuo discloses that the transparent substrate may be used as a glazing (page 233).

Regarding claims 44-45 and 48-49, Yoshihiro discloses that the substrate may be used on a motor vehicle window, a shop window, or a glass (page 233).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1771

10. Claims 33 and 45-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-131101 to Yoshihiro (as applied to claims 26-31, 34-35, 38-39, 44 and 47-49 above).

Regarding claim 33, Yoshihiro discloses that the low refractive index layer may comprise a mixture of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ , but does not specifically mention any specific atomic ratios (page 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the atomic ratio of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ , because it is understood by one of ordinary skill in the art that the atomic ratio determines properties such as the refractive index of the material and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claims 45-49, Yoshihiro discloses that the substrate may be used as a glazing on glass (Patent Abstract), but does not specifically mention using the substrate as a mirror. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the substrate in any application desiring the characteristics taught by Yoshihiro, because it is within the general skill of a worker to use the substrate in any application desiring the taught characteristics.

11. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-131101 to Yoshihiro as applied to claims 26-31, 34-35, 38-39, 44 and 47-49 above, and further in view of either USPN 5,332,618 to Austin or USPN 5,719,705 to Machol.

Yoshihiro discloses that the low refractive index thin layers may comprise at least one of



Art Unit: 1771

silicon oxide and aluminum oxide (page 6), but does not specifically mention the use of halogenated oxides. Austin (column 8, line 46 through column 9, line 15) and Machol (column 4, lines 46-65) each disclose that it is known in the art to use silicon oxide and/or aluminum oxyfluoride as a low refractive index material in an alternating high/low/high/low transparent substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the low refractive index layers from any suitable low refractive index material, such as silicon oxide and/or aluminum oxyfluoride, as taught by Austin and Machol, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

12. Claims 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-131101 to Yoshihiro as applied to claims 26-31, 34-35, 38-39, 44 and 47-49 above, and further in view of USPN 5,073,451 to Iida et al. (hereinafter referred to as Iida).

Regarding claims 40-45, Iida discloses that a 4-layer high-low-high-low glass article may further include silver films and thereby exhibit electromagnetic shielding effects (column 6, lines 1-9). Iida also discloses that such a multilayer coating may be used as a vehicle windshield or a rear window glass by lamination with an uncoated transparent glass plate using any suitable plastic interlayer such as polyvinyl butryal (column 4, lines 4-53). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the antireflection coating of Yoshihiro include one or more silver films and/or any suitable plastic interlayer, as disclosed by Iida, because the article could then exhibit electromagnetic shielding effects and/or could be used as a vehicle windshield or a rear window glass.

Regarding claim 41, Iida discloses that the glass plate of a 4-layer high-low-high-low glass article may be either colorless or colored and that the glass may be curved (column 5, lines 44-56). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the glass of Yoshihiro colorless, colored and/or curved, as disclosed by Iida, because the material selection depends on the intended use and because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

13. Claims 26-31, 33-35, 38-39 and 44-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-131101 to Yoshihiro in view of USPN 5,493,102 to Takase et al. (hereinafter referred to as Takase).

Regarding claims 26-31, 33-35, 38-39 and 44-49, Yoshihiro discloses a transparent substrate having at least one surface comprising an antireflection coating made of a multilayer stack having alternating thin layers of high and low refractive indices comprising at least one high-index thin multilayer (14a and 14b) having a refractive index value higher than 1.9 and lower than 2.45 comprising at least one titanium oxide layer (14b) and at least one additional layer (14a) having a refractive index of at most 2.3, such as an antimony-doped tin oxide layer, and low refractive index layers (13 and 15) having a refractive index of from 1.30 and 1.65 (see entire document including Patent Abstract and page 6).

Yoshihiro does not specifically mention using an at least one additional layer comprised of silicon nitride or aluminum nitride, but Takase discloses that silicon nitride and aluminum nitride are well known high refractive index materials (column 6, lines 22-42 and claim 7). It would have been obvious to one having ordinary skill in the art at the time the invention was

Art Unit: 1771

made to make the at least one additional high index layer from any suitable high refractive index material, such as silicon nitride or aluminum nitride, as taught by Takase, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

Regarding claim 27, Yoshihiro discloses that the high-index multilayer may have a refractive index ranging from 2.25 to 2.38 (page 6).

Regarding claim 28, Yoshihiro discloses that the thin layers may comprise dielectric materials such as titanium oxide (Patent Abstract).

Regarding claim 29, Yoshihiro discloses that the titanium oxide layer and the additional high index layer are contiguous layers and the additional high index layer is closer to the substrate than the titanium oxide layer (Patent Abstract Figure).

Regarding claim 30, Yoshihiro discloses that the absolute value of the difference between the refractive index of the additional high index layer less the refractive index of the first titanium oxide layer may be from 0.1 and 0.6 (page 6).

Regarding claim 31, Yoshihiro discloses that the low refractive index thin layers may comprise at least one of silicon oxide and aluminum oxide (page 6).

Regarding claim 33, Yoshihiro discloses that the low refractive index layer may comprise a mixture of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ , but does not specifically mention any specific atomic ratios (page 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the atomic ratio of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ , because it is understood by one of ordinary skill in the art that the atomic ratio determines properties such as the refractive index of

Art Unit: 1771

the material and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 34, Yoshihiro discloses that the antireflection coating may have a formula (high-index layer/low-index layer) $n$ , wherein  $n$  is 2 or 3 (Patent Abstract).

Regarding claim 35, Yoshihiro discloses that the doped metal oxide may be antimony-doped tin oxide (page 6).

Regarding claim 38, Yoshihiro discloses that the transparent substrate may comprise a high index layer distinct from the high-index multilayer, having a refractive index of between 1.9 and 2.2 which comprises tantalum oxide, zirconium oxide, tin oxide, or indium oxide (page 6).

Regarding claim 39, Yoshihiro discloses that the transparent substrate may be used as a glazing (page 2).

Regarding claims 44 and 47, Yoshihiro discloses that the substrate may be used on a display screen (page 2).

Regarding claims 44 and 48-49, Yoshihiro discloses that the substrate may be used as a glazing on glass (Patent Abstract)

Regarding claims 45-49, Yoshihiro discloses that the substrate may be used as a glazing on glass (Patent Abstract), but does not specifically mention using the substrate as a mirror. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the substrate in any application desiring the characteristics taught by Yoshihiro, because it is within the general skill of a worker to use the substrate in any application desiring the taught characteristics.

Art Unit: 1771

14. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-131101 to Yoshihiro in view of USPN 5,493,102 to Takase as applied to claims 26-31, 33-35, 38-39 and 44-49 above, and further in view of either USPN 5,332,618 to Austin or USPN 5,719,705 to Machol.

Yoshihiro discloses that the low refractive index thin layers may comprise at least one of silicon oxide and aluminum oxide (page 6), but does not specifically mention the use of halogenated oxides. Austin (column 8, line 46 through column 9, line 15) and Machol (column 4, lines 46-65) each disclose that it is known in the art to use silicon oxide and/or aluminum oxyfluoride as a low refractive index material in an alternating high/low/high/low transparent substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the low refractive index layers from any suitable low refractive index material, such as silicon oxide and/or aluminum oxyfluoride, as taught by Austin and Machol, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

15. Claims 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-131101 to Yoshihiro in view of USPN 5,493,102 to Takase as applied to claims 26-31, 33-35, 38-39 and 44-49 above, and further in view of USPN 5,073,451 to Iida.

Regarding claims 40-45, Iida discloses that a 4-layer high-low-high-low glass article may further include silver films and thereby exhibit electromagnetic shielding effects (column 6, lines 1-9). Iida also discloses that such a multilayer coating may be used as a vehicle windshield or a rear window glass by lamination with an uncoated transparent glass plate using any suitable plastic interlayer such as polyvinyl butryal (column 4, lines 4-53). It would have been obvious to

Art Unit: 1771

one having ordinary skill in the art at the time the invention was made to make the antireflection coating of Yoshihiro include one or more silver films and/or any suitable plastic interlayer, as disclosed by Iida, because the article could then exhibit electromagnetic shielding effects and/or could be used as a vehicle windshield or a rear window glass.

Regarding claim 41, Iida discloses that the glass plate of a 4-layer high-low-high-low glass article may be either colorless or colored and that the glass may be curved (column 5, lines 44-56). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the glass of Yoshihiro colorless, colored and/or curved, as disclosed by Iida, because the material selection depends on the intended use and because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

16. Claims 26-35, 38-39 and 44-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-131101 to Yoshihiro in view of either USPN 5,332,618 to Austin or USPN 5,719,705 to Machol.

Regarding claims 26-35, 38-39 and 44-49, Yoshihiro discloses a transparent substrate having at least one surface comprising an antireflection coating made of a multilayer stack having alternating thin layers of high and low refractive indices comprising at least one high-index thin multilayer (14a and 14b) having a refractive index value higher than 1.9 and lower than 2.45 comprising at least one titanium oxide layer (14b) and at least one additional layer (14a) having a refractive index of at most 2.3, such as an antimony-doped tin oxide layer, and low refractive index layers (13 and 15) having a refractive index of from 1.30 and 1.65 (see entire document including Patent Abstract and page 6).

Yoshihiro does not specifically mention using an at least one additional layer comprised of zinc oxide, but both Austin (column 8, lines 46-64) and Machol (column 4, lines 46-65) disclose that zinc oxide is a well known high refractive index material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the at least one additional high index layer from any suitable high refractive index material, such as zinc oxide, as taught by Austin and Machol, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

Regarding claim 27, Yoshihiro discloses that the high-index multilayer may have a refractive index ranging from 2.25 to 2.38 (page 6).

Regarding claim 28, Yoshihiro discloses that the thin layers may comprise dielectric materials such as titanium oxide (Patent Abstract).

Regarding claim 29, Yoshihiro discloses that the titanium oxide layer and the additional high index layer are contiguous layers and the additional high index layer is closer to the substrate than the titanium oxide layer (Patent Abstract Figure).

Regarding claim 30, Yoshihiro discloses that the absolute value of the difference between the refractive index of the additional high index layer less the refractive index of the first titanium oxide layer may be from 0.1 and 0.6 (page 6).

Regarding claim 31, Yoshihiro discloses that the low refractive index thin layers may comprise at least one of silicon oxide and aluminum oxide (page 6).

Regarding claim 32, Yoshihiro discloses that the low refractive index thin layers may

Art Unit: 1771

comprise at least one of silicon oxide and aluminum oxide (page 6), but does not specifically mention the use of halogenated oxides. Austin (column 8, line 46 through column 9, line 15) and Machol (column 4, lines 46-65) each disclose that it is known in the art to use silicon oxide and/or aluminum oxyfluoride as a low refractive index material in an alternating high/low/high/low transparent substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the low refractive index layers from any suitable low refractive index material, such as silicon oxide and/or aluminum oxyfluoride, as taught by Austin and Machol, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

Regarding claim 33, Yoshihiro discloses that the low refractive index layer may comprise a mixture of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ , but does not specifically mention any specific atomic ratios (page 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the atomic ratio of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ , because it is understood by one of ordinary skill in the art that the atomic ratio determines properties such as the refractive index of the material and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 34, Yoshihiro discloses that the antireflection coating may have a formula (high-index layer/low-index layer) $n$ , wherein  $n$  is 2 or 3 (Patent Abstract).

Regarding claim 35, Yoshihiro discloses that the doped metal oxide may be antimony-doped tin oxide (page 6).



Art Unit: 1771

Regarding claim 38, Yoshihiro discloses that the transparent substrate may comprise a high index layer distinct from the high-index multilayer, having a refractive index of between 1.9 and 2.2 which comprises tantalum oxide, zirconium oxide, tin oxide, or indium oxide (page 6).

Regarding claim 39, Yoshihiro discloses that the transparent substrate may be used as a glazing (page 2).

Regarding claims 44 and 47, Yoshihiro discloses that the substrate may be used on a display screen (page 2).

Regarding claims 44 and 48-49, Yoshihiro discloses that the substrate may be used as a glazing on glass (Patent Abstract)

Regarding claims 45-49, Yoshihiro discloses that the substrate may be used as a glazing on glass (Patent Abstract), but does not specifically mention using the substrate as a mirror. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the substrate in any application desiring the characteristics taught by Yoshihiro, because it is within the general skill of a worker to use the substrate in any application desiring the taught characteristics.

17. Claims 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-131101 to Yoshihiro in view of either USPN 5,332,618 to Austin or USPN 5,719,705 to Machol as applied to claims 26-35, 38-39 and 44-49 above, and further in view of USPN 5,073,451 to Iida.

Regarding claims 40-45, Iida discloses that a 4-layer high-low-high-low glass article may further include silver films and thereby exhibit electromagnetic shielding effects (column 6, lines 1-9). Iida also discloses that such a multilayer coating may be used as a vehicle windshield or a

Art Unit: 1771

rear window glass by lamination with an uncoated transparent glass plate using any suitable plastic interlayer such as polyvinyl butryal (column 4, lines 4-53). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the antireflection coating of Yoshihiro include one or more silver films and/or any suitable plastic interlayer, as disclosed by Iida, because the article could then exhibit electromagnetic shielding effects and/or could be used as a vehicle windshield or a rear window glass.

Regarding claim 41, Iida discloses that the glass plate of a 4-layer high-low-high-low glass article may be either colorless or colored and that the glass may be curved (column 5, lines 44-56). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the glass of Yoshihiro colorless, colored and/or curved, as disclosed by Iida, because the material selection depends on the intended use and because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

18. Claims 45-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 60-081047 to Tatsuo (as applied to claims 26-31, 34, 38-39, 44-45 and 48-49 above).

Regarding claims 45-49, Tatsuo discloses that the substrate may be used as a motor vehicle window, a shop window, or a glass (page 233), but does not specifically mention using the substrate as a mirror. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the substrate in any application desiring the characteristics taught by Tatsuo, because it is within the general skill of a worker to use the substrate in any application desiring the taught characteristics.

Art Unit: 1771

19. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 60-081047 to Tatsuo as applied to claims 26-31, 34, 38-39, 44-45 and 48-49 above, and further in view of either USPN 5,332,618 to Austin or USPN 5,719,705 to Machol.

Tatsuo discloses that the low refractive index thin layers may comprise at least one of silicon oxide and aluminum oxide (Patent Abstract), but does not specifically mention the use of halogenated oxides. Austin (column 8, line 46 through column 9, line 15) and Machol (column 4, lines 46-65) each disclose that it is known in the art to use silicon oxide and/or aluminum oxyfluoride as a low refractive index material in an alternating high/low/high/low transparent substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the low refractive index layers from any suitable low refractive index material, such as silicon oxide and/or aluminum oxyfluoride, as taught by Austin and Machol, because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

20. Claims 33 and 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 60-081047 to Tatsuo as applied to claims 26-31, 34, 38-39, 44-45 and 48-49 above, and further in view of USPN 5,073,451 to Iida.

Regarding claim 33, Tatsuo does not specifically mention using a mixture of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$  for the low refractive index layers, but Iida discloses that it is known in the art to make low refractive index layers out of a mixture of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$  (column 7, lines 1-23). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the low refractive index layers from any suitable low refractive index material, such as a mixture of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ , as taught by Iida, because it has been held to be within the general

Art Unit: 1771

skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

Iida does not specifically mention any specific atomic ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the atomic ratio of  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ , because it is understood by one of ordinary skill in the art that the atomic ratio determines properties such as the refractive index of the material and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claims 40-45, Iida discloses that a 4-layer high-low-high-low glass article may further include silver films and thereby exhibit electromagnetic shielding effects (column 6, lines 1-9). Iida also discloses that such a multilayer coating may be used as a vehicle windshield or a rear window glass by lamination with an uncoated transparent glass plate using any suitable plastic interlayer such as polyvinyl butryal (column 4, lines 4-53). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the antireflection coating of Tatsuo include one or more silver films and/or any suitable plastic interlayer, as disclosed by Iida, because the article could then exhibit electromagnetic shielding effects and/or could be used as a vehicle windshield or a rear window glass.

Regarding claim 41, Iida discloses that the glass plate of a 4-layer high-low-high-low glass article may be either colorless or colored and that the glass may be curved (column 5, lines 44-56). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the glass of Tatsuo colorless, colored and/or curved, as disclosed by Iida, because the material selection depends on the intended use and because it has been held to

Art Unit: 1771

be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

***Response to Arguments***

21. Applicant's arguments have been considered but are moot in view of the new grounds of rejection.

***Conclusion***

22. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

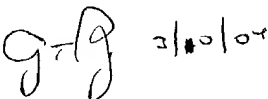
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).


Art Unit: 1771

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

atp

  
**ANDREW T. PIZIALI**  
**PATENT EXAMINER**

  
**TERREL MORRIS**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**